Section 5-6: Inequalities in Two Triangles

By the end of this lesson, you should be able to answer:

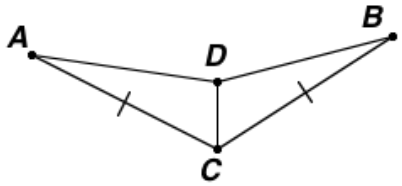
- How do you apply the Hinge Theorem or its converse to make comparisons in two triangles?
- How do you prove triangle relationships using the Hinge Theorem or its converse?

Hinge Theorem

Converse of the Hinge Theorem

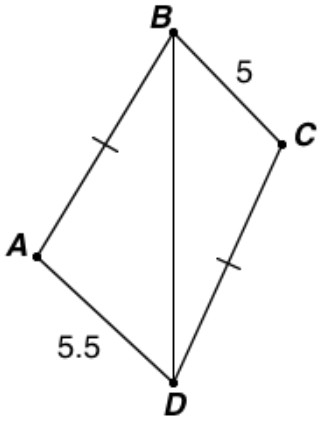
Example 1: Compare the given measures.

a. *AD* and *BD*



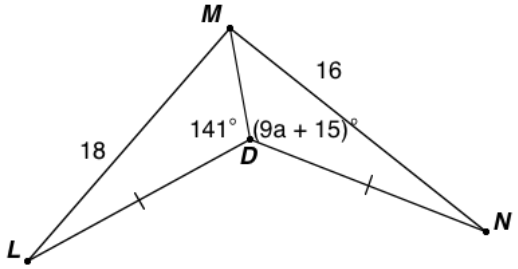
$m\angle ACD = 70°,\ m\angle BCD = 68°$

b. $m\angle ABD,\ m\angle CDB$



Example 2: Doctors use a straight-leg-raising test to determine the amount of pain felt in a person's back. The patient lies flat on the examining table, and the doctor raises each leg until the patient experiences pain in the back area. Matt Mitarnowski can tolerate the doctor raising his right leg 35° and his left leg 65° from the table. Which leg can Matt raise higher above the table? How do you know?

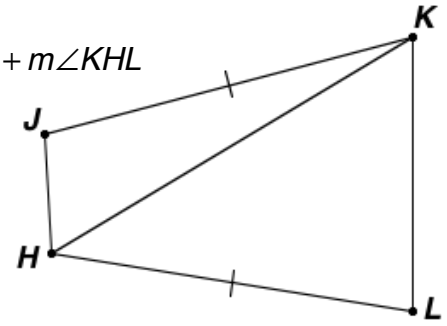
Example 3: Find the range of possible values for *a*.



Example 4: Prove the following.

Given: $JK = HL$; $JH \parallel KL$; $m\angle JKH + m\angle HKL < m\angle JHK + m\angle KHL$

Prove: $JH < KL$



Problem Set:

"Make visible what, without you, might perhaps never have been seen." - Robert Bresson